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8   ANSI/NIST-ITL 1-2011 SUPPLEMENT:
9   Mobile Identification
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12   Draft
13   August, 2012
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15   Version A-1
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22   SHOULD THIS BE A SUPPLEMENT OR A SEPARATE STANDARD?
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Table of Contents

ANSI/NIST-ITL Mobile ID Working Group

Informative

TO BE ADDED TO AS PEOPLE PARTICIPATE

Chair: Brad Wing

1.0 Introduction

Informative

The ANSI/NIST-ITL standard has formed the basis for transmission of biometric data in law enforcement related applications throughout the world. In July 2009, NIST published the *Mobile ID Device Best Practice Recommendation, Version* as *Special Publication 500-280,* commonly referred to as the *Mobile ID BPR.* It included many specifications that were eventually incorporated into the 2011 version of the ANSI/NIST-ITL standard *Data Format for the Interchange of Fingerprint, Facial Other Biometric Information, NIST Special Publication 500-290.* Since the publication of the *Mobile ID BPR*, several companies have marketed products with claims of conformance to its specifications.

A major change influenced by the *Mobile ID BPR* was the addition of Subject Acquisition Profile (SAP) levels for facial acquisition from mobile devices. Subject Acquisition Profiles for Fingerprint (FAP) and Iris (IAP) were also added to the standard based upon the *Mobile ID BPR.*

However, the Security and Encryption, Communication Protocols, and Profiles (Military and Law Enforcement) were not incorporated into ANSI/NIST-ITL 1-2011.

The addition of new modalities to the ANSI/NIST-ITL 1-2011 standard that can be acquired in a mobile environment (such as DNA and voice), as well as practical experience gained in applying the concepts of the *Mobile ID BPR* led to requests to update the document, and incorporate it as part of the standard itself. A major area that was asked to be considered was the development of a 'lite' version of the transmission standard for mobile use. This has been specifically addressed in this Supplement.

This Supplement does not re-specify the elements of the *Mobile ID BPR* that were incorporated into ANSI/NIST-ITL 1-2011. It is possible and in many cases highly desirable to use a full ANSI/NIST-ITL transmission format, even when acquiring data in a mobile environment. However, some circumstances may dictate smaller communication packages, or standard operating procedures (SOPs) may dictate that the person collecting the biometric data in the mobile environment do a minimum of, or no data entry 'on location," with data entry performed at another location. This data entry could even be based directly upon voice capture of spoken information from the operator at the time of biometric sample collection.

Part of this document is normative and some is informative. They are clearly marked. To highlight the practical aspects of deploying mobile ID devices, there is a section in this document discussing several 'real life' examples.

2.0 Relationship of ANSI/NIST-ITL LITE and ANSI/NIST-ITL 1-2011

Informative

The ANSI/NIST-ITL 1-2011 standard forms the basis for the interchange of biometric and related information *between* and *among* systems. The ANSI/NIST-ITL 1-2011 standard was not designed to specifically handle data transmission *within* a system, although it is often used for that purpose.

This specification now allows the possibility of a mobile unit communicating in a 'short format' (i.e. ANSI/NIST-ITL LITE) with one or more systems. For instance, a military unit may be able to send data to the home nation system, as well as to a joint command system. Similarly, a local law enforcement organization could send basic data to a state / provincial law enforcement organization as well as to a regional support center (that may cross state / provincial lines).

The specification of a 'LITE' format also allows manufacturers to standardize their products in a manner that will be beneficial to all – reducing the time necessary for customization of software (and possibly hardware) for each installation – thus resulting in direct cost savings to the end consumer.

ANSI/NIST-ITL LITE is a Data Format standard. It is meant to specify the minium necessary data for transmission within a system. Information can be added sequentially within a system until all of the information is available that is necessary for compilation of a full ANSI/NIST-ITL 1-2011 conformant record for transmission to another system.

Some possible configurations involving ANSI/NIST-ITL Lite are illustrated below. These are not meant to be definitive or the only possible configurations. They are shown for illustration purposes only.

NOTE: THIS IS A PLACEHOLDER SECTION. THE CONCEPTS SHOWN ARE TO KICK OFF THE DISCUSSION PROCESS. THE WORKING GROUP WILL DECIDE CONTENT. THESE ARE NOT DEFINITIVE.

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Figure 1
SEPARATE MOBILE UNITS COLLECTING DATA ON THE SAME PERSON IN
DIFFERENT PLACES AND/OR TIMES

Concept 1

- In this example, two units may be used in the field -- independently or together: a 3 modality biometric capture device and a Rapid DNA device.

- Due to limited bandwidth or because operators are not to type in data in the field, the samples are sent with minimum packaging to a local unit, where more information is added to the transaction(s). That is then forwarded to a central site where the normal ANSI/NIST-ITL transaction is formed with all required information. This allows interoperability between systems and organizations to be maintained.
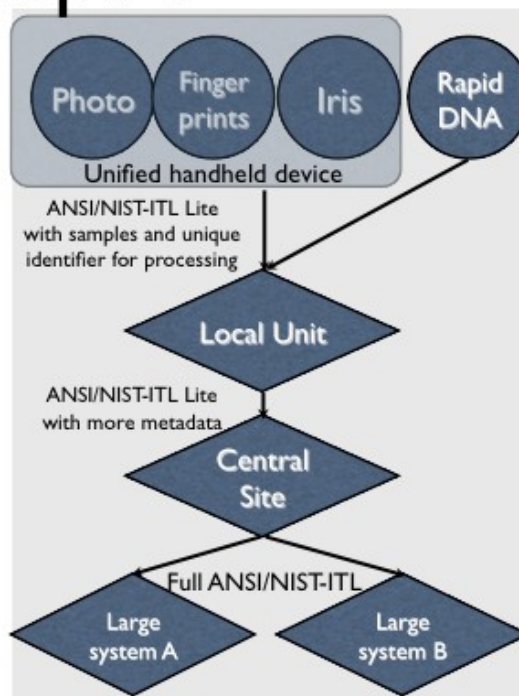
126   Concept 1 illustrates that with the addition of Rapid DNA systems, the concept of mobile
127   applications involving biometrics has greatly expanded. An example of how this Concept could
128   come into play is a Disaster Victim Recovery scene. Photos, fingerprints and iris images (if
129   possible) would be taken using one unit. DNA samples using another. The information would
130   be brought to the local processing center and sent to a law enforcement agency for formatting
131   into ANSI/NIST-ITL transactions that could be submitted to the FBI, US-VISIT, INTERPOL or
132   other organizations that accept ANSI/NIST-ITL formatted transactions.
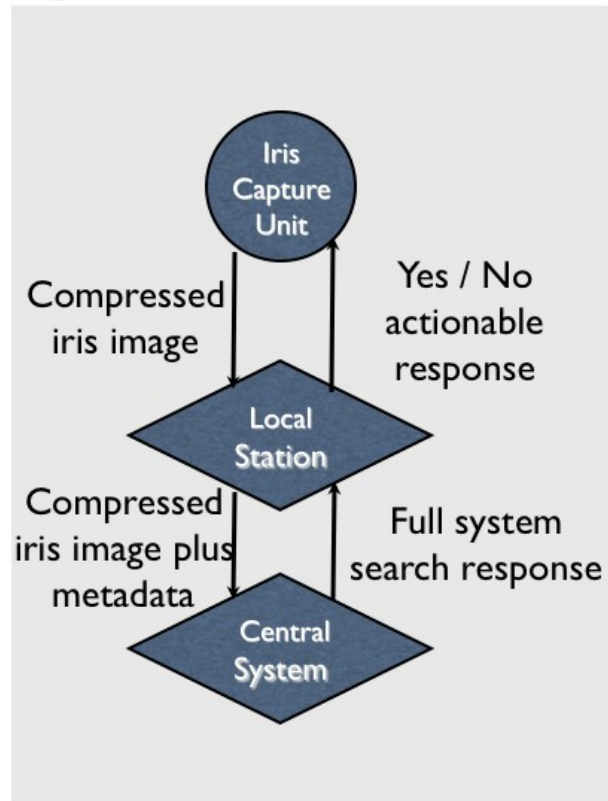133
134   The key is that there must be enough information collected by the operator or collection device at
135   the scene to uniquely associate the data with the deceased individual This can be accomplished
136   in a variety of ways, including automated GPS data entry, time/date entry, and voice capture
137   from the operator describing how the samples were taken. Note that the voice recording from
138   the operator can be included as an associated context data record Type 21 in the ANSI/NIST-ITL
139   full transaction.

140 Figure 2
141 **Rapid Identification with Limited Bandwidth**

Concept 2

- The interactions with the field unit would be with minimum payload

- The local station composes an ANSI/NIST-ITL formatted transaction for submission and handles the response

Iris Capture Unit

Compressed iris image

Yes / No actionable response

Local Station

Compressed iris image plus metadata

Full system search response

Central System

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148 In this concept, a mass-processing of individuals is being performed, with a quick turn-around
149 requirement. An iris image is captured and forwarded to a local station for processing. Only if a
150 'Yes' is returned with an identifier for the individual does the operator spend more time collecting
151 metadata about the individual and possibly more biometric samples. The exact response would,
152 of course, depend upon the situation and the Standard Operating Procedures (SOP).
153
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157

158   Figure 3
159   **Capture Modules Physically Separated from Control Unit**

Concept 3

- In this case, the biometric capture devices are operated from a control unit using Web Services for Biometric Devices

- Data is provided to the base station using ANSI/NIST-ITL Lite

- Base station interacts with the Central System using the full ANSI/NIST-ITL
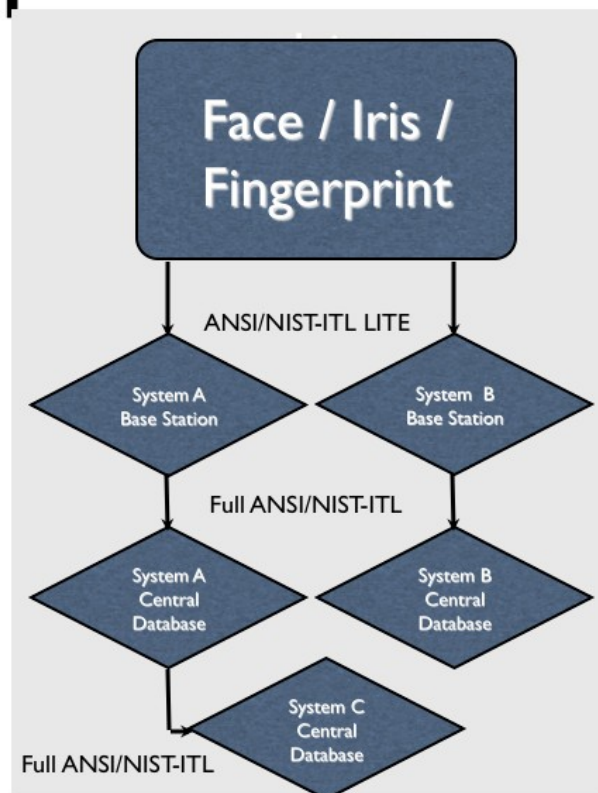
161
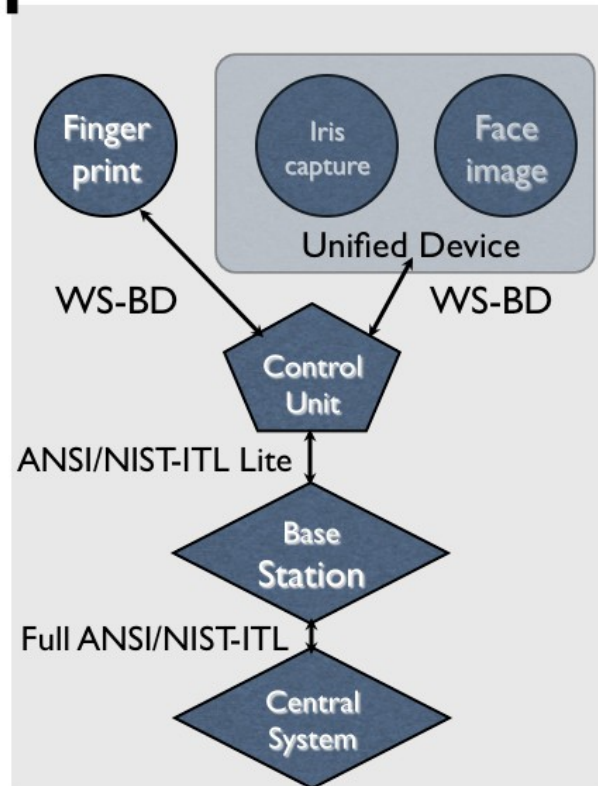
162   WS-BD indicates formatting according to the *Specification for WS-Biometric Devices (WS-BD),*
163   *NIST Special Publication 500-288.* A coordinator could actually provide the commands to
164   capture units that are physically separate. All responses would be sent to the control unit and not
165   forwarded to the capture units. This may be important when the operator does not want to have
166   the response possibly visible to the subject. Another concept would be that the operator is
167   holding the capture device in one hand, and must maintain the other has free for safety.
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11
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176
177 Figure 4
178 **Mobile Modules Communicating to Different Systems**
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Concept 4

- In this case, the biometric capture devices send biometric samples and basic information to two base stations using ANSI/ NIST-ITL Lite

- Base stations prepare full transmission using the full ANSI/ NIST-ITL format for database search

- System A also sends data to System C using the full ANSI/ NIST-ITL format.

Face / Iris / Fingerprint

ANSI/NIST-ITL LITE

System A Base Station   System B Base Station

Full ANSI/NIST-ITL

System A Central Database   System B Central Database

System C Central Database

Full ANSI/NIST-ITL

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182 ------------------------------
183
184 There are many possibilities for each of the concepts highlighted here, and they are only a few
185 examples of how an ANSI/NIST-ITL Lite format could be useful in practical applications.
186
187
188 It must be stressed, however, that use of ANSI/NIST-ITL Lite in no way implies that poorer
189 quality biometric samples are acceptable. It is designed solely to allow rapid transmission of
190 data with a minimum of associated 'overhead'.
191
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3.0 Normative References

Normative

ANSI/NIST-ITL 1-2011, NIST Special Publication 500-290, *"Data Format for the Interchange of Fingerprint, Facial & Other Biometric Information"*, November, 2011 available at http://www.nist.gov/itl/iad/ig/ansi_standard.cfm

NIST Special Publication 500-288, *"Specification for WS-Biometric Devices (WS-BD)"*, Version 1, March 2012 available at http://www.nist.gov/itl/iad/ig/bws.cfm

OASIS Standard *Biometric Identity Assurance Services (BIAS) SOAP Profile, Version 1.0,* May 2012 available at **http://docs.oasis-open.org/bias/soap-profile/v1.0/os/biasprofile-v1.0-os.pdf**

MORE TO BE ADDED AS NEEDED

4.0 Terms and Definitions

Terms are listed here if they do not already appear in *ANSI/NIST-ITL 1-2011, Section 4*

ANSI/NIST-ITL Lite

  A specification based upon the ANSI/NIST-ITL standard that incorporates a minimum of data and associated metadata. It is not to be used as an interchange format between organizations, but solely as a means to efficiently collect data in a mobile environment so that a full ANSI/NIST-ITL transaction can be created at another location and or time, should an interface be required with another system.

MOBILE

SOAP

WS-BD

  This stands for the *Specification for WS-Biometric Devices (WS-BD), NIST Special Publication 500-288.*   WS indicates Web Services.

<mark>MORE TO BE ADDED AS NEEDED.</mark>

5.0 Record Specification

Normative

<mark>THIS SECTION IS WRITTEN SOLELY TO GET PEOPLE THINKING. IT CAN BE TOTALLY CHANGED __ DEPENDING UPON THE NEEDS AND DESIRES OF THE CANVASSEES.</mark>

The ANSI/NIST-ITL LITE record format is designed for minimum 'payload'. It is also designed to ensure the integrity of the biometric data sample and the the proper metadata is associated with it.

There are several levels of possible communications. They are outlined here. Each has its specific format, with increasing information building up to the full ANSI/NIST-ITL format. The record types in ANSI/NIST-ITL LITE otherwise do parallel those of the full ANSI/NIST-ITL but without all of the required fields, and data formats may be different.

A major change is that Base64 encoding is not required for the data (thus reducing space). In XML encoding, the full NIEM-conformant tags are not required. It is recommended to use the mnemonics (short-tag).

The only mandatory items in ANSI/NIST-ITL LITE is defined below:

Record Type 1 is reduced to the Transaction Control Number (TCN), equivalent to Field 1.009).

5.1 Face Images

For face images, only a full frontal face image is transmitted. The SAP level (equivalent to Field 10.013) with the face image, The compression algorithm (CGA) is also needed in order to properly read the face data (equivalent to field 10.011). The data itself does not need to be converted to Base64 for transmission.

Additional fields from ANSI/NIST-ITL may be added per the needs of the organization

5.2 Iris Images

For iris images, the eye label ELR (equivalent to field 17.003) and the compression algorithm CGA (equivalent to field 17.011) are required. The iris data need not be converted to Base64 format for transmission.

Additional fields from ANSI/NIST-ITL may be added per the needs of the organization

5.3 Voice Samples

267

268 For voice samples, the only required non-sample data is specification of the CODEC and/or
269 container.

270

271   5.4 Friction Ridge Samples

272 For each sample, Friction ridge generalized position FGP is required. This is equivalent to
273 one of the following fields: 4.004, 13.013, 14.013, 15.013, and 19.013. Note that images of
274 latent prints may be gathered using mobile devices.   The data may be compressed or even
275 in template format.   In the case when templates are sent for quick checking against a
276 database, if the system owners determine that an enrollment record is necessary, an image
277 corresponding to the requirements of the full ANSI/NIST-ITL record shall be transmitted.

278

279   5.5 Rapid DNA data

280 There is no specific required information. It is dependent upon the user needs. However,
281 any information shall be consistent with the field definitions in the full ANSI/NIST-ITL
282 standard.

283

284   5.6 Dental Images

285 There is no specific required information. It is dependent upon the user needs. However,
286 any information shall be consistent with the field definitions in the full ANSI/NIST-ITL
287 standard.

288

289   5.7 Other images

290 It may be advisable to take images of other body parts of an individual. In this case, Image
291 type IMT (equivalent to field 10.003) is required along with the image itself.

292 If the image is not of the body but would be places in record type 21 in a full ANSI/NIST-ITL
293 transaction, it is to be marked with the associated context number ACN (equivalent to Field
294 21.021).

295 **ANNEXES**

296

297 **A)   Short FORMAT ENCODING**

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299

300 DEVELOP TABLE FOR REPRESENTATION HERE

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302
B) Practical Examples of Mobile ID Implementations
Informative

This section presents some illustrative examples of field deployment of mobile ID devices in short summary fashion.
THIS SECTION CAN BE INITIALLY FILLED OUT USING REPORTS FROM THE DHS TWG and EXAMPLES FROM DOD and other sources as provided . EACH NEEDS TO BE SHORT AND CLEAR.

1)

Scenario:

Lessons learned / recommendations for future development & improvement:

2)